

# Red Dragon

24dB/oct morphing 4-pole low-pass filter with a unique, Soviet-era filter core

Thank you for your interest in/purchase of the Red Dragon eurorack module. We would like to thank you for considering a place for the Red Dragon in your modular synthesizer! We think it has a unique character and hope you will find it of great use in your musical endeavours for years to come. The Red Dragon is a eurorack modular format product, and requires a eurorack standard power supply and case to operate.

## **COLOUR... TONE... CHARACTER...**

During the 1980's, a Russian electronics designer realised that one could build a musical filter using a fairly unconventional method.

Unlike many filter topologies, this method did not use capacitors to employ an RC time constant in its core filter stages. Instead, the internal properties of a programmable amplifier chip are modulated by a special "programming" input found on these devices. One of the modified properties is bandwidth of the amplifier. Changing this particular attribute over time effectively limits the frequencies that can pass through the amplifier, resulting in filtering! Because device attributes other than bandwidth are also changing at the same time, this filter stage has instabilities at certain frequencies along the audible spectrum, resulting in colourful distortions and a character all its own.

The resonance's character is especially profound, resulting in bubbly and sometimes screeching sci-fi tones. The Red Dragon achieves a 24dB/oct resonant low-pass response by cascading four of these stages.

What's more, you can morph between the two pole extremes (6dB and 24dB) to change the slope of the filter on the fly, either manually or through voltage control.

**The curious filter structure of the Red Dragon favours character over precision. It is sure to impart colourful tone to your source material.**

## FEATURES

### Rich 4-pole filtering with a control set made just for modular synthesizers

- Designed from the ground up for versatility in the modular system, the Red Dragon features bipolar attenuverters on its many CV inputs
- Voltage controlled resonance
- Resonance is capable of self-oscillation. A resonance clipping switch can tame the resonance feedback at extreme settings, resulting in a different tone
- Built in VCA (with disable) after filter saves you the use of a dedicated VCA module
- Signal and CV levels optimised for the contemporary eurorack modular system (+/-5V CV, 10Vpp+ audio)

### Filter morphing

- Morph between 6dB and 24dB filter slopes, or set it in-between. While 24dB excels at meaty bass sounds, the brighter filter slope of 6dB is sometimes desirable for signals with higher frequency content
- Filter morphing is voltage controlled, and results in some interesting effects when modulated
- A dual colour LED indicates filter morph position and VCA level

### Designed for the contemporary modular synthesizer

- Built-in filter core overdrive at the input stage allows you to vary your signal's level up to full saturation. No need to boost signal level before filtering for those classic overdriven sounds!
- Voltage control of input drive lets you modulate the saturation of the filter over time. Useful for the "velocity" modulation needed to produce acidic basslines!

## TECHNICAL SPECIFICATIONS

**Width:** 12HP | **Depth:** 30mm  
**Current draw:** +35mA, -35mA @ 12V

## INTERFACE

### CUTOFF

Adjust the filter cutoff with your hands and via two CV inputs. CUT A has a dedicated attenuverter. Try modulating the cutoff with two different speed LFOs, then use the attenuverter for interesting cross-modulation between these two sources. These inputs respond well to audio-rate modulation.

### RESONANCE

The resonance of the Red Dragon, which can also be voltage controlled, is especially wild and unpredictable thanks to its unique filter structure. For a (slightly) tamer resonance at extreme settings, set the RES CLIP switch to ON. The resonance attenuverter allows you to use a variety of signals as useful modulation sources.

### MORPH

The Red Dragon's filter core has four poles. The MORPH control allows you to morph between the extreme 6dB and 24dB filter slopes or set it at any point in between. Modulating this parameter with CV can give interesting effects depending on the character of the INPUT signal. Audio rate modulation results in vocal sounds from the filter. **Try modulating MORPH in time with a step-sequence for a different type of accent!**

The dual colour LED indicates morph position, and VCA level.

### CORE DRIVE

The input stage features a built-in core overdrive, allowing you to boost your signal's level up to full saturation. The DRIVE input can be used to give dynamic movement to the saturation over time. Modulate it on a step basis for "velocity" in your next acid bassline!

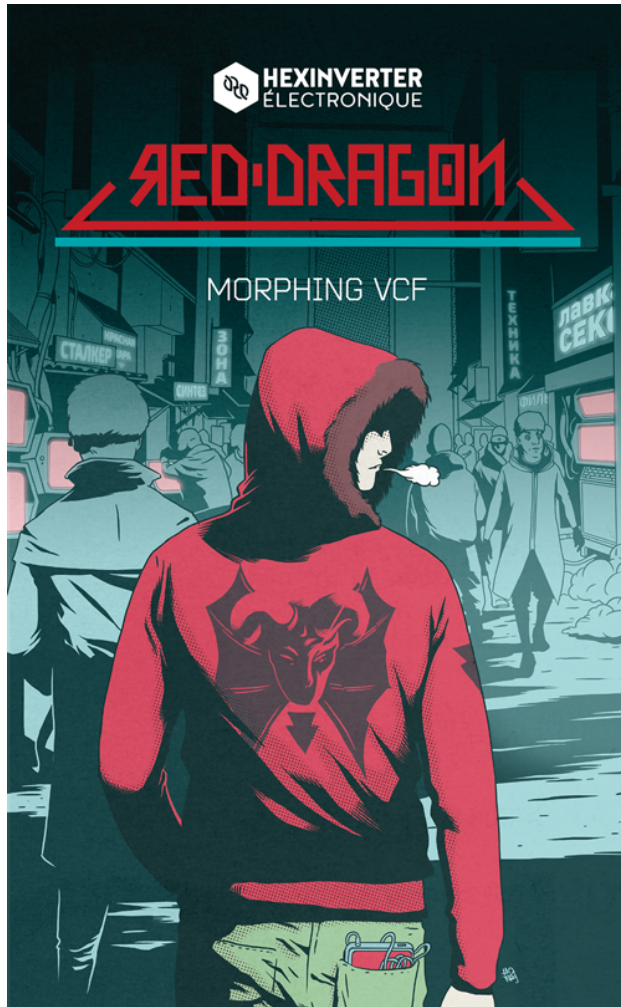
### VCA

The Red Dragon is ready to be controlled by your favourite envelope, LFO, or other signal source, without using another precious VCA in your system. *You can never have too many VCAs!* Just set the OUT VCA switch to OFF and plug your CV source into the VCA jack to make use of the built-in VCA. To use Red Dragon as a standalone filter, set the switch to ON – this will fully open the VCA. **This is useful for free-running sounds like drones, or when you would like to use a more colourful VCA instead of the more transparent amplifier built in.**



## QUICK REFERENCE CARD

These are included packaged with every module, but if you lost yours, you might find it handy to print it out and have near your modular for reference.



### QUICK REFERENCE CARD

Wiggle the CUTOFF with your hands or via the CV inputs. OUT A has a dedicated attenuverter.

The Red Dragon's voltage controlled RESONANCE is particularly wild sounding due to its unique filter structure!



Turning the RES CLIP on clips the resonance feedback and produces different tones at high resonance settings.

MORPH lets you blend between a 6dB and 24dB filter. Try modulating this parameter with CV for interesting effects. The LED changes colour to indicate the MORPH blend at the output jack.

The Red Dragon includes a VCA at its output for maximum versatility. Setting the OUT VCA switch to ON will normally open the VCA. Turning the switch OFF will normally silence the VCA, allowing you to apply volume envelopes or other signals to the VCA's CV input, without using a dedicated VCA module.

The Red Dragon's filter core can be overdriven with the INPUT DRIVE control. CV can be used to modify this control over time, for interesting changes in timbre.

The 24dB/oct low-pass filter core of the Red Dragon was inspired by Soviet-era synthesizer technology. Its method of filtering becomes unstable at particular frequencies, adding unique undertones to signals passed through it.

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**Current draw:** +35mA, -35mA